INSTITUTE	**DIPLOMA STUDIES**
PROGRAM	**DIPLOMA ENGINEERING (COMPUTER ENGINEERING)**
SEMESTER	**2**
COURSE TITLE	**APPLIED PHYSICS**
COURSE CODE	**09GS1101**
COURSE CREDITS	**5**

Objective:

1 To prepare the students to have a basic knowledge of fundamental quantities, their units and measurement. To study various cases under laws of motion. To have knowledge of various states of maters also to have knowledge of fundamentals of electricity and magnetism.

Course Outcomes: After completion of this course, student will be able to:

1 To measure dimensions of various materials and compare units.

2 To understand and relate phenomena with the help of laws of motion.

3 To identify various states of materials and their relevance.

4 To understand role of various laws of electricity and use of electrical components and basic circuits.

5 To understand role of magnetism and its applications.

6 To measure dimensions of various materials and compare units.

Pre-requisite of course: Basic knowledge of science.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Units, Dimensions and Measurements** Definition of unit, Fundamental and Derived units, systems of units-CGS, MKS and SI, Dimensional Formula, Uses and limitations of dimensional analysis, introduction to accuracy, precision and errors, types of errors, error analysis	5
2	**Laws of Motion** Introduction to Motion, Displacement and Distance, Average speed, velocity and acceleration, Inertia, Newton's first law of motion, momentum, Newton's second law of motion, conservation of momentum, Newton's third law of motion	10

Contents : Unit	Topics	Contact Hours
3	**Properties of Matter** Stress, strain, Hooke's law and modulus of elasticity-Young, bulk and modulus of rigidity, Viscosity, newton's law of viscosity, types of flows, Reynold's number, surface tension and capillary action, Ideal gas, ideal gas equation, Gas laws	10
4	**Electricity** Static electricity: electric charge, coloumb's law, electric field, electric flux, capacitance, types of capacitors, capacitors in series and parallel Current electricity: current, EMF and Ohm's law, resistance, series and parallel	10
5	**Magnetism** Magnetic field, thumb rule, magnetic forces, Biot-Savart Law, electro-magnetic induction-self-inductance and mutual inductance, faraday's law, lenz's law, applications-transformer	10
Total Hours		**45**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Galvanometer** To determine resistance of a galvanometer using half deflection method	2
2	**Conversion of Galvanometer into Ammeter and Voltmeter** To convert a given Galvanometer into Voltmeter of a desired range., To convert a given Galvanometer into Ammeter of a desired range	4
3	**Vernier Calipers** To know the use of the Vernier Calipers, To measure the length, width and height of the given rectangular block	4
4	**Micrometer Screw gauge** To measure the diameter of the small sphere using micrometer screw gauge	2
5	**Newton’s second law of motion** To find the acceleration of a ball, To find the distance covered by the ball in the given time interval	4
6	**Resistors and Capacitors** To study Resistors in series and parallel., To study Capacitors in series and parallel	4
7	**Young's modulus by Searle's method** Young's modulus by Searle's method	2
8	**Torsional pendulum** To determine the moment of inertia of the disc about the wire as axis and rigidity of the material of wire using Torsional pendulum	2
9	**ohm's law** ohm's law	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
10	**friction co-efficient** friction co-efficient	2
Total Hours		**28**

Textbook :

1 Applied Physics, Dineshkumar Mehta, Atul Prakashan, 2018

References:

1 Applied physics, Applied physics, P.G. Bhandarkar, Nirali Publicati, 2017

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking
40.00	40.00	15.00	5.00	0.00	

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

1 http://nptel.ac.in/courses/115106090/15

2 http://nptel.ac.in/courses/115104088/

3 http://hyperphysics.phy-astr.gsu.edu/hbase/index.html

4 http://vlab.amrita.edu/index.php

5 https://jeemain.guru/pdfdownload-haliday-resnick-fundamentals-of-physics-for-iit-jee/

6 https://amrita.olabs.edu.in/

7 http://vlabs.iitkgp.ernet.in/be/exp4/index.html